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ABSTRACT

A study examined approximately 130 projects that were conducted in New York between November 1980 and December 1983 as a part of the state's Short-Term Program for Economic Development. During the study, researchers interviewed representatives of the businesses, industries, unions, and educational institutions involved in the training programs in order to determine the effectiveness of the programs themselves and the methods used to evaluate them. Based on these interviews, the researchers concluded that the Short-Term Program for Economic Development resulted in increases in productivity and quality or quantity of goods and services for the participating companies. In addition to the creation of over 1,800 new jobs, primarily in the manufacturing industry, the program was responsible for increases in state and local tax revenues. (Appended to this report are project summaries, a discussion of the design of the study, and lists of interview topics for production and service organizations and for special training situations.) (MN)

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TRAINING & ECONOMIC DEVELOPMENT

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**TRAINING AND ECONOMIC DEVELOPMENT:
THE IMPACT OF INDUSTRY-SPECIFIC TRAINING
ON BUSINESS AND THE ECONOMY OF NEW YORK STATE**

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The study was coordinated by Paul Zachos and Tom Hick of the Bureau of Occupational Education Research and Evaluation.

INTRODUCTION AND SUMMARY OF FINDINGS

Introduction

The Short-Term Training Program for Economic Development represents one of the New York State Education Department's major efforts towards the revitalization of the State's economy. From November 1980 to December 1983, over 130 projects were funded at a cost of approximately two and one-half million dollars to support efforts to strengthen business and industry and the State's labor force.

This study looks at some of the contributions of the Short-Term Training Program to:

1. the economic well-being of specific companies producing goods or services in New York State,
2. the employability of selected members of the State's labor force, and
3. the development of the State's economy.

The findings of the study indicate that the program has made a contribution to the State's economic development by supporting efforts which resulted in:

- o increases in productivity, quality or quantity of goods and services for participating companies,
- o the creation of over 1,800 new jobs, primarily in the manufacturing sector, and
- o increases in State and local tax revenues.

The study, conducted by the Bureau of Occupational Education Research and Evaluation, was based on interviews with representatives of the businesses, industries, unions and educational institutions which took part in the training projects from November 30, 1980 through June of 1983.

Support of training costs during this time period was from grants of Federal Vocational Education Act funds administered by the State Education Department, and totaled \$2,018,729. More than six thousand individuals were trained under this program during that period.

Summary of Findings

The overwhelming majority of companies surveyed found the training projects partially or completely successful, and about one quarter of the companies reported that the success of the projects exceeded their expectations.

Approximately 90% of participating companies experienced increases in productivity, quality or quantity of goods or services, which they attributed in some degree to effects of the training program. The accumulated dollar value of these increases, based on estimates made by company representatives, exceeded \$33 million when prorated for a one-year period.

The individual short-term training projects were often a component of combined efforts made by various agencies to stimulate the development of business and industry through loans, grants, and job or organizational analyses. Many of the companies which participated in the Short-Term Training Program invested large amounts of money in equipment, construction, new technologies and services as part of their developmental efforts. The companies interviewed reported having spent over \$66 million in such investments. The training projects were an essential and often necessary support to these companies' developmental efforts, and these investments can be seen as direct contributions to the economy of New York State.

Subsequent to the training program, participating companies continued to make investments. Approximately \$15 million of subsequent investments were identified during the interviews. In many cases the success of the training program had a substantial influence on decisions to continue making investments.

One of the major types of investments made by companies when starting up, expanding or modifying their operations was to develop training programs for new job holders and to rehire and retrain people who had been laid off. Training played a critical role in assuring the success of investments and the permanence of jobs. More than eighteen hundred jobs were generated in companies served by the Short-Term Training Program during this period. Seventeen hundred of these jobs were in the manufacturing sector. Within approximately two years after being filled, the 1,700 new jobs created in the manufacturing sector can be expected to result in an additional 2,295 jobs and more than \$8,058,000 annually in local and State tax revenues.

The benefits described above are attributable to cooperative efforts by the State Departments of Commerce and Labor, local chambers of commerce, industrial development agencies, municipal planning and development agencies, and private industry councils as well as the participating educational institutions at the local, regional and State levels. In many cases, educational institutions acting as agents for the Short-Term Training Program were initiators of such cooperative relationships.

A number of additional impacts of the program were identified during the course of the study, including:

- o increased morale and motivation of workers trained,
- o improved work behaviors and quality of performance of workers trained,
- o increased employability of trainees,
- o advancement and salary increases for trainees,
- o increased sensitivities of training agencies (school districts, BOCES and community colleges) to needs of business and industry, and
- o an improved image of New York State and its agencies as being sensitive and responsive to the needs of business and industry.

This study is a description of the characteristics of the short-term training projects, the methods used to assess their impact and the impact findings themselves. In addition, brief capsule summaries are presented of all of the projects that were studied.

SECTION I THE ROLE OF THE EDUCATION DEPARTMENT IN NEW YORK STATE'S ECONOMIC DEVELOPMENT

A major transformation is taking place in New York State's economy. It is characterized by a shift from heavy manufacturing to the production of high-technology goods, the rapid growth of producer and information services, the growth of small businesses and their increasing importance in generating employment. This economic transformation is being accelerated by the introduction of new technological automation in production. All of these changes place increased demands on the skills of workers and managers, and require upgrading of the State's work force. Education and training are key elements in the State's economic development strategy.

Many State, regional and local agencies are involved in economic development efforts. The State Education Department and other educational agencies throughout the State can play a key role in educating and training the State's work force by working more closely with the corporate sector and by applying educational resources to expand and reshape the State's productive capacity, particularly in advanced technology.

The need for a coordinated effort to revitalize New York State's economic climate became evident to policymakers in the 1970's. During that decade, despite a diversified economy and a significant growth in service industries, the creation of new jobs in the State failed to keep pace with the rate of job losses in manufacturing and other sectors of the economy.

In its September 1983 policy statement on the role of education in support of the State's economic development, the Board of Regents pointed out that "although educational institutions are not the generators of economic development, . . . they have . . . crucial roles to play in maintaining and upgrading educational standards . . . in offering educational services for the retraining of the State's labor force, and in providing information and research services to supplement industrial development."¹

The Board of Regents noted the importance of productivity as a determinant of economic growth and the role of education in increasing the productivity of the labor force. They stated: ". . . two factors are repeatedly cited as major elements affecting productivity, namely:

- investment in new technology (equipment, facilities, processes), and
- investment in human resources (knowledge and development of workers' skills and capabilities)."²

¹ New York State Education Dept. The Role of Education in Support of New York State's Economic Development. A Policy Statement of the Board of Regents. Albany 1983.

Economic development can be defined as "a set of planned activities designed to attract new industry; expand existing industry; revitalize existing industry; and increase the productivity growth rate."² "Productivity" is defined as "the relationship of input to output," with input being a combination of labor and capital, and output being goods produced and services rendered to persons and to other producers.

The Board of Regents has identified eight basic capacities of the total educational system which support the State's economic development:

1. Scientific and humanistic research,
2. Cooperation between educational institutions and the business and industrial community to provide the services and resources required for economic revitalization,
3. Provision of specifically tailored education and training programs to support the State's economic development efforts,
4. Assurance that all students acquire knowledge, skills and attitudes needed for current and future jobs,
5. Provision of access to the education, training, and retraining necessary to gain employment for all out-of-school youth and adults,
6. Enhancement of economic development, through improving the quality of life, by arts and cultural institutions,
7. Elimination of barriers within the education and rehabilitation system which keep disabled individuals from being independent, and
8. Provision of research and information services vital to economic development by the State's libraries, library systems and archives.

Proposals for enhancing each of these capabilities are described in the Regents' policy statement, as are recommended initiatives for educational institutions during the 1980's related to economic development. The intended outcomes of these initiatives are: new jobs, increased productivity, increased research and development, reduced tax burden, increased efficiency in production and service, reduced unemployment of special populations, and regional and local economic diversity.

² Ibid., p. 5

³ National Association of State Directors of Vocational Education. Position Statement of National Association of State Directors of Vocational Education. The Role and Responsibility of Vocational Education in Economic Development and Productivity. Arlington, Va. 1981, p. 3.

⁴ Ibid., p. 3

⁵ NYS Education Dept., op. cit., p.13.

⁶ Ibid., p. 1.

SECTION II

THE SHORT-TERM TRAINING PROGRAM FOR ECONOMIC DEVELOPMENT

A. The Purpose of the Short-Term Training Program

The Education Department has, since 1981, set aside a special segment of its Federal Vocational Education Act allocation to develop short-term training/economic development projects for the State's businesses and industries. By December 31, 1983, over 130 projects affecting jobs had been funded, with the allocation of funds for training continuing into 1984.

In general terms, the goals set by the Board of Regents in support of the State's economic development efforts are to:

1. Expand and diversify the economic base,
2. Improve the employment and tax base,
3. Retain and revitalize existing industry,
4. Encourage new industry and attract industry from elsewhere,
5. Increase the productivity growth rate, and
6. Promote investment in research and human resources.

Short-term training projects are specifically directed toward (1) creating jobs to expand the labor market base of available jobs, and (2) increasing worker productivity through training. One or more of these goals may be addressed in any particular project, with the exception of 3 and 4 which tend to be independent of each other.

B. How the Program Works

The process for meeting the specialized training needs of companies and industries involves a system of cooperative planning between employers, State agencies, Regional Education Centers for Economic Development, labor unions, chambers of commerce, economic and industrial development agencies, local business/industry councils or other representatives of an industry, and other groups with an interest in economic development. Usually, an employer identifies a training need, and then contacts a local, regional, or State office. A needs assessment, conducted jointly by the employer and a training agency, defines specific training needs and identifies possible educational and financial resources. A specific training package is developed by the educational agency, with the assistance of staff of the Regional Education Center for Economic Development, and is reviewed by the employer and other interested agencies. Financial commitments for training projects are coordinated at the regional level, with final funding approval by the State Education Department.

C. Characteristics of the Projects Funded

The short-term training projects can be classified in a number of ways. This section will describe the characteristics of the projects involved in this study according to five categories:

- o general purposes of the training,
- o types of business served,
- o types of sponsoring training agency,
- o types of training provided, and
- o demographic characteristics of the trainees.

For the General Purposes of Training category, each project is classified according to a system used internally by the Bureau of Economic Development Coordination. For the Type of Business Served, each project is classified according to the predominant characteristic. For the Type of Training Provided, however, multiple classifications were used, e.g., a project involving both managerial and basic job skills is counted in both classifications.

For each of the five major categories covered in this section there is a table listing the number of projects/companies falling under each classification. For purposes of this study it was decided that projects funded later than June 30, 1983 would not have had sufficient time to reach completion and experience the intended impacts. For this reason the study was limited to those projects funded from the initiation of the program in November 1980 to June 30, 1983. Ninety-six projects were initiated during this period. Due to multiple projects designed to serve single company or industry needs, project cancellations, and difficulties in obtaining data on several projects, this study was conducted with a total of 78 of the original 96 projects.

1. General Purposes of the Training Projects

Completely New - Training is done in order to provide skilled workers for a completely new business or a new division of an old business. (Regents goals 1, 2, and 4)

New from Out of State - Training is done in order to provide skilled workers for an existing business which has moved to New York from out of State and is, therefore, new to New York State. (Regents goals 1, 2, and 4)

New Location for a Company Within the State - Training is done to provide skilled workers for an existing business which was moving to a new location within New York State. It is, then, a company which is new to a specific location. (Regents goal 3)

Business Expansion - Training is done to support an expansion of a business. This usually involves hiring additional employees. (Regents goals 1, 2, 5, and 6)

Technological Change - Training is directed at new skills needed in conjunction with the introduction of a new technology. (Regents goals 1, 2, 3, 5, and 6)

Employee Upgrade - Training is provided for current employees to enhance their skills or give them new skills, e.g., craft cross-training. (Regents goals 3, 5, and 6)

Small Business Support - Training is done in order to meet the special needs of small business. (Regents goals 3, 5, and 6). Such training is listed as a separate classification because small business training projects serve a number of small businesses at the same time, rather than just one company.

Skill Shortage - Where local shortages of specific skills which are in demand have been identified, an educational agency will conduct a training program to alleviate the shortage by supplying skilled workers. (Regents goals 1, 2, 3, 4, 5, and 6)

Unemployment Reduction - Training is done to reduce local unemployment levels by providing unemployed persons with skills which will make them more employable. (Regents goals 1, 2, and 6)

Retraining Laid-Off Workers - Retraining is provided for workers recently laid off because a company went out of business or cut back operations. The purpose is to enable these individuals to obtain new employment with new skills. (Regents goals 2 and 6)

All of these classifications serve the goal of promoting investment in human resources. The economic impacts associated with each of these purposes of training are discussed in the section of this study titled Impact Models for two broad subcategories under which the ten general purposes of training can be subsumed. The two subcategories are support to Individual Companies and Special Training Situations. Under the Individual Companies subcategory fall the first seven general purposes classifications: completely new, new from out of State, company relocating within the State, business expansion, technological change, employee upgrade, and support to small business. Under Special Training Situations fall the remaining three: skill shortage, unemployment reduction, and retraining of laid-off workers. Table A indicates the number of projects funded under each category of purpose.

TABLE A

Purposes Underlying the Short-Term Training Projects

Support to Individual Companies

Completely New	5
New from Out-of-State	3
New Location for a Company within the State	2
Business Expansion	30
Technological Change	6
Employee Upgrade	13
Small Business Support	2
	<u>61</u>

Special Training Situations

Skill Shortage	8
Unemployment Reduction	4
Retraining Laid-Off Workers	5
	<u>17</u>

2. Types of Businesses Served by the Training Projects

There are many ways of classifying businesses. The following scheme for classifying the companies which took part in the program into mutually exclusive categories was developed in consultation with the Education Department's Bureau of Economic Development Coordination:

Manufacturing - Companies which manufacture a product.

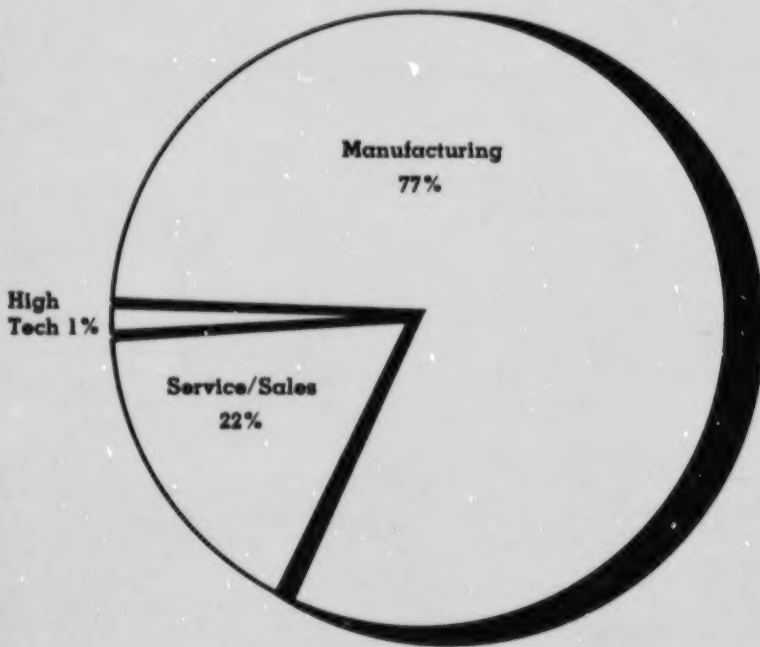
Service/Sales - Companies which do not manufacture a product, in the usual sense, but rather provide a service or sell products produced by someone else.

High Technology - Companies, either manufacturing or service, which are in a high technology industry. These industries provide products and/or services that represent an improvement in reliability or application over existing state-of-the-art products or services.

Figure A shows the relative proportions of types of business served by the program before July of 1983.

FIGURE A

**Types of Businesses Served by the
Short-Term Training Projects
(Total Number = 78)**



3. Types of Sponsoring Training Agencies

In accordance with the provisions of the Vocational Education Act of 1976, training funds could only be allocated to public schools, BOCES and community colleges. These different types of educational institutions served as sponsors for the specific training projects in this program. They are referred to in this report as training agencies. The classifications in this category are as follows:

Postsecondary Educational Agencies - Usually a community college or agricultural and technical college.

BOCES - Boards of Cooperative Educational Services which provide regional coordination of resources and services to strengthen the State's public elementary, secondary, and continuing education programs.

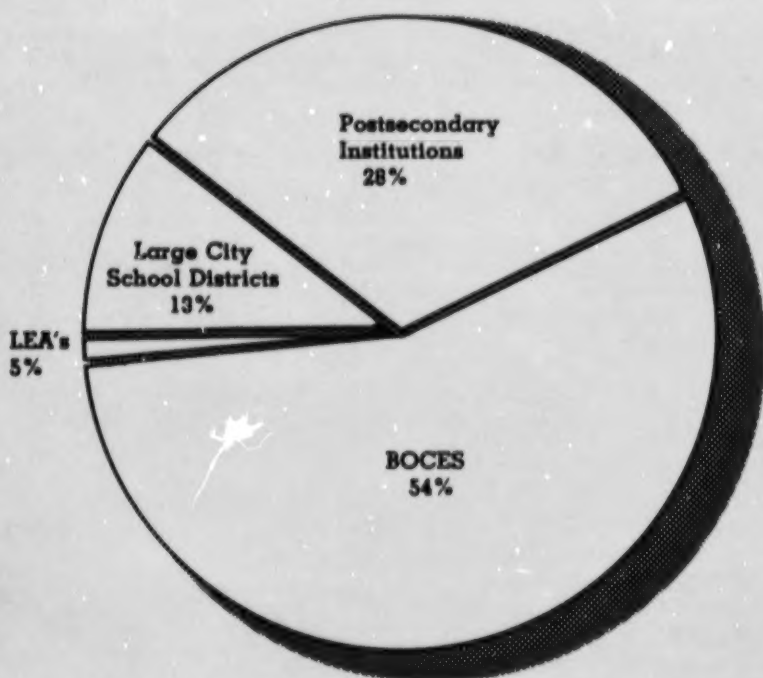
LEA - Local Educational Agency, a school district.

Large City School District - One of the five large city school districts (New York City, Yonkers, Syracuse, Rochester or Buffalo)

Figure B shows the relative proportions of training agencies in each of the four categories which served as sponsors for the training projects.

FIGURE B

**Types of Educational Agencies
That Served as Sponsors of the
Training Projects
(Total Number = 78)**



4. Types of Training Provided

The following scheme for classifying types of training was developed in cooperation with the Bureau of Economic Development Coordination. The total number of types of training listed for the pre-June 1983 projects exceeds 78 because more than one type of training was often conducted for a single company. Training was categorized as follows

Managerial - Training in the skills needed by managers and supervisors. Included are topics such as time management, motivating people, leadership, planning, organizing, labor relations, decision making, communication, problem solving, and performance evaluation.

Basic Job Skills - General skills that may be considered as prerequisite to most jobs or are entry level skills for a wide range of jobs in a specific field. Examples are basic work habits, job safety, key-boarding, and basic electronics.

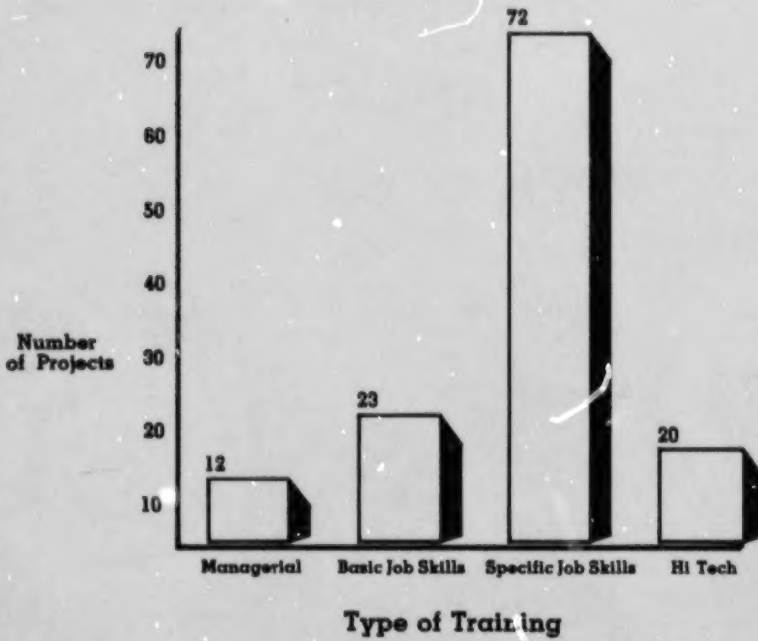
Specific Job Skills - Those skills are applicable to only one job or a narrow range of jobs. Examples include operating a specific kind of knitting machine, statistical quality control for a specific manufacturing company, and injection molding.

High Technology - Specific job skills in a high technology field such as microprocessor circuitry or digital effects in film/TV editing.

Figure C displays the number of short-term training projects which provided each type of training. Note that while high technology firms formed only a small portion of participating companies (see Figure A), a substantial proportion of participating companies required training in a high technology area as part of their developmental effort. The training categories are not mutually exclusive.

FIGURE C

**Types of Training Provided in the
Short-Term Training Projects**



3. Characteristics of the Trainees

Table B provides a breakdown of the types of individuals who received training. This categorization of participants was not available from all projects that were studied.

TABLE B
Trainee Characteristics

	Upgrades	New Hires	Special Training Situations	sub- totals
Black	520	238	37	795
White	2,212	1,136	346	3,694
Hispanic	136	49	23	208
Indian	14	19	1	34
Asian	42	6	8	56
Handicapped	6	2	1	9
Subtotals	<u>2,930</u>	<u>1,450</u>	<u>416</u>	<u>4,796</u>
Total	4,796			

Data on the gender of trainees were not collected consistently from all projects. Information about gender of trainees was obtained for 1,450 trainees in 33 projects. Fifty-five percent of those trainees were female.

SECTION III IMPACT MODELS

The Short-Term Training Program serves individual companies that produce goods or services, and in a more general way helps provide workers with skills required by business and industry. Two distinct models were developed to accommodate the dynamic of these two different situations. Each of these models is more fully described below.

A. Model for Production and Service Organizations (individual companies)

The model to describe impacts associated with firms that produce goods and services is illustrated in Figure D. The underlined terms in the following discussion refer to components of that model.

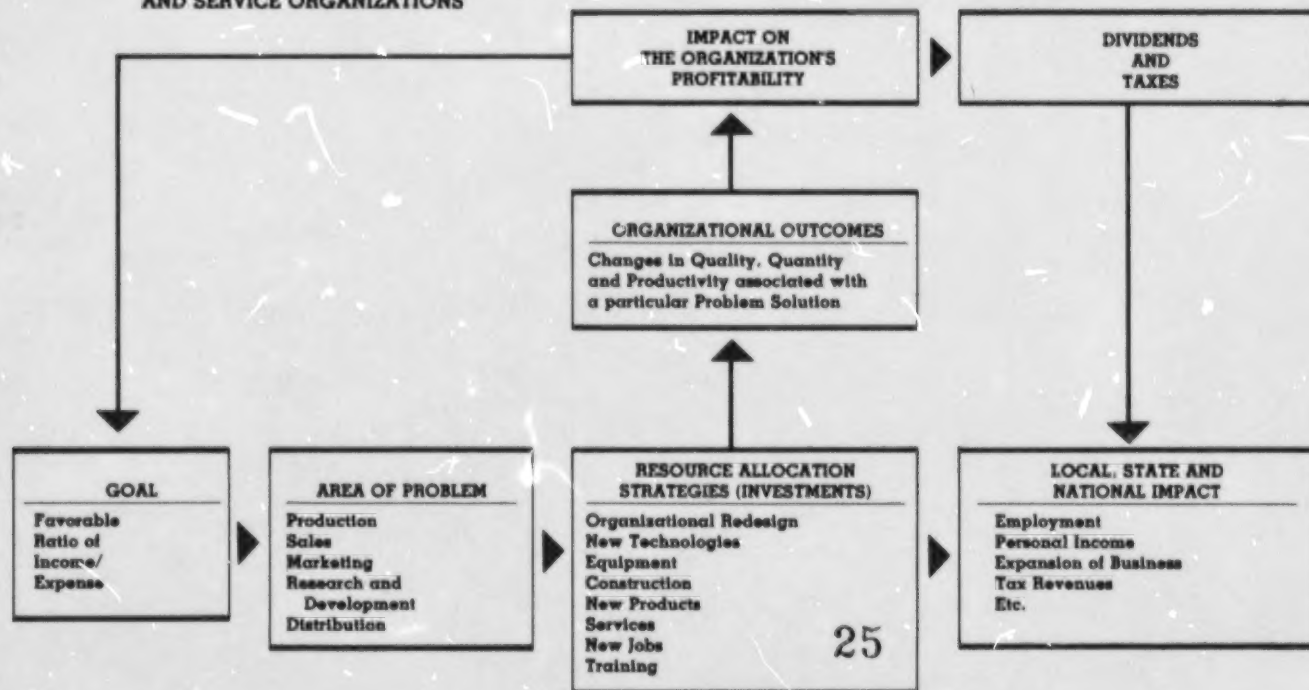
The model assumes that every firm's goal is to increase its income and decrease its expenses. If an organization is successful in achieving this goal, the profit or the amount of money management has to work with will increase. Management measures profitability as the return on capital (or on prior investments). Profits serve as a source of funds to finance further investments. Investments can be made in a number of forms, including construction, equipment and training. These investments in addition to previous investments contribute to business growth.

To increase income or reduce expenses, management conducts analyses of its operations and identifies some problem in the areas of marketing, sales, research and development, production or distribution. The solution to the problem is often expressed in terms of increases in quality (measures of usable product materials; technological improvements, improvements in services, etc.), quantity (number of units of production or sales), or productivity (the ratio of outputs to inputs). Management usually selects one or more strategies to address these problems. The purchase of new equipment, training, and organizational redesign are among the many strategies management has at its disposal. In many companies served by the short-term training program, training has been one of several strategies used to increase income and/or reduce expenses.

If the organization is successful in solving its problem and increases its profits, there are at least two ways that the additional money may be used. It may be withdrawn from the business by the owners for personal use (i.e., dividends), or it may be reinvested in the business. Firms reinvest in their businesses by creating new jobs, purchasing equipment, purchasing services, instituting new technology, construction, developing new products, etc. Each of these investments has a direct impact on the economic health of the locality, state, region and nation.

FIGURE D

IMPACT MODEL FOR PRODUCTION
AND SERVICE ORGANIZATIONS



A case history of a typical organization receiving short-term training funds will illustrate the dynamics of the model for production and service organizations:

Area of Problem Organization A employed 25 workers when it received a large, new government contract. To fulfill the terms of the contract, the firm needed to increase production by 400% in one year.

Resource Allocation Strategies (Investments) To meet this new demand, the company had to set up three new production lines and train 75 new workers for these lines. New equipment was leased, and the requisite number of workers was trained using the resources of the Short-Term Training Program.

Organizational Outcomes As a result, after one year, the company was able to produce 2,000 units per day versus 200 units in the preceding year. Productivity also increased since the cost per unit was reduced 16% during the same period. Simultaneously, the number of rejects at the quality control station was reduced by 10%.

Impact On Profitability While the exact increase in profits was not disclosed, the company reported that it intended to purchase the leased equipment with a portion of its profits. The value of this new investment would be approximately \$300,000.

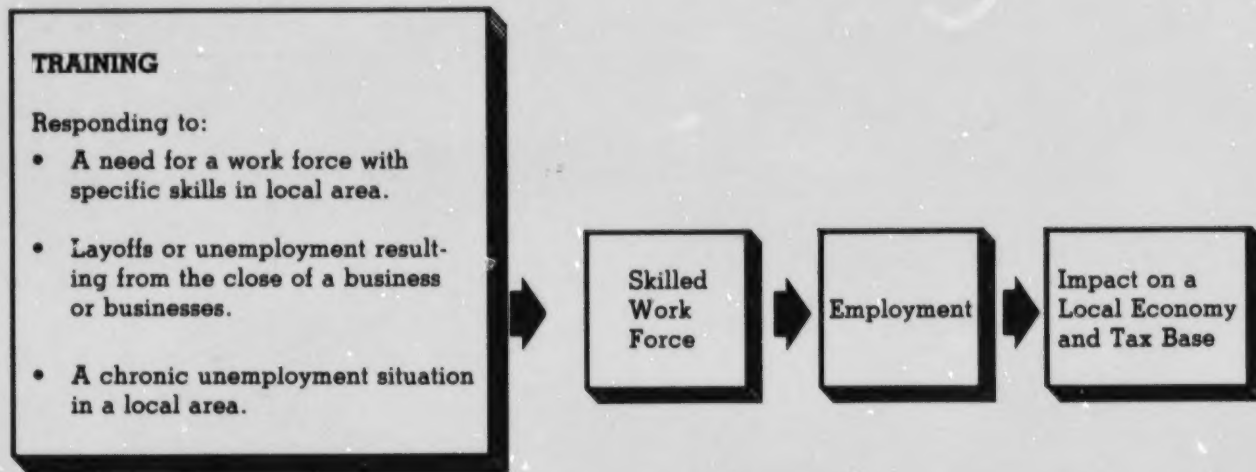
Local And State Impact Over half of the 75 new jobs were filled by Blacks and Hispanics. Among those newly hired, men and women were equally represented. No previous experience was required for any job. Using employment and income multipliers from the Regional Economic Models Inc. (REMI) interindustry model of the New York State economy for 1972, each job generated in the manufacturing sector results, within two years, in an additional 1.35 jobs in other New York State industries and \$4,740 (1981 dollars) in local and State tax revenues. It is projected that the 75 new jobs in this example will create an additional 101 new jobs in other New York State industries, and \$355,000 (1981 dollars) in State and local taxes.

B. Model for Special Training Situations

The model used to depict the impact of providing individual workers with skills required by business and industry is illustrated in Figure E.

This model portrays a situation in which there is a shortage of labor with a specific set of skills, or an emerging or chronic unemployment situation in some locality. A local organization (e.g., an LEA, labor union or Private Industry Council) then recruits unemployed workers and works with the Short-Term Training Program to develop a training package to prepare individuals with specific sets of skills. Once training is completed, trainees are either placed in jobs or seek employment independently in the marketplace. Important indicators of success in this model are the number of persons completing training vs. the number beginning training, the numbers of individuals who are placed in jobs for which they are trained, the average length of stay on these jobs, and the average wage.

FIGURE E
Impact Model for Special Training
Situations



SECTION IV IMPACT FINDINGS

Since November 1980, the Short-Term Training Program for Economic Development has overseen the provision of specifically designed training projects to a large number of companies and organizations representing various industries. The purpose of these training projects has been to support:

1. the economic well-being of specific companies producing goods or services in New York State,
2. the employability of selected members of the State's labor force, and
3. the development of the State's economy.

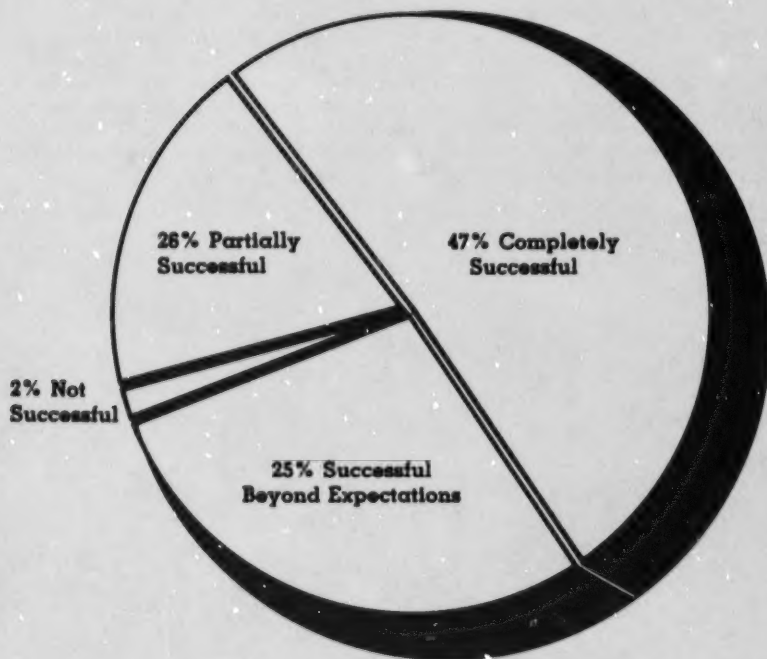
The findings of this study indicate that the program has had a number of impacts. It has supported businesses and industries at critical moments of their development - times of expansion, relocation into or around the State, and at times when their enterprises were in danger of failing and required upgrading or changes of direction. The companies that have been supported made and continue to make major investments in the State's economy. In many instances decisions to make additional investments were directly influenced by the short-term training projects and their outcomes. Participating companies reported that the projects on a whole have been highly successful. They had an impact on the productivity, quality or quantity of production or sales of most of the companies that participated. The introduction to this study gave a summary of the findings. This chapter presents more detailed findings concerning the impact of the Short-Term Training Program on the three areas listed above.

A. Success of the Short-Term Training Projects

On the whole, the short-term training projects were judged to have had a high degree of success by participating companies. The overwhelming majority of companies surveyed found the training programs either partially or completely successful and one-quarter of the companies reported the degree of success of the project exceeded their expectations. Figure F summarizes the judgments of participating companies concerning the degree of success of their short-term training projects. Fifty-three companies responded to this item.

FIGURE F.

Degree of Success of The Short-Term Training Program as Judged by Representatives of Participating Companies
(Number of Responses = 53)



B. Impacts on the Economic Well-Being of Specific Companies Producing Goods or Services in New York State

Changes in Productivity, Quality or Quantity of
Goods or Services

Companies were asked to describe their indices of productivity, quality and/or quantity of goods or services. They were also asked to provide or estimate changes in productivity, quality or quantity to which the short-term training project had contributed and to estimate the dollar value of these changes to the company over the course of a year. Some representatives of companies stated that there had been changes on one or more of these indices but were hesitant or unable to quantify them. Some new companies or companies which were initiating a new production line or service were excluded from this analysis because no baseline was available against which to measure changes. The findings are displayed in Table C. Note that many of the respondents were unable to give a percent value to the improvement that occurred in their operations. Fewer still were able to estimate the dollar value per year of these improvements. For this reason the dollar values listed may be considered an underestimate of the accumulated value of the changes for participating companies.

A sample of the productivity and quality indices used by participating companies is provided below.

Productivity

\$ value of products produced per employee per day
of items per person-hour output
units per week
units per employee
standard hour vs. clock hour
% change in down time per worker
equipment down time
sales dollars per person

Quality

rejection rate
amount of defective materials
rate of customer rejection
amount of rework
amount of scrap
rate of breakdowns

Table C

Changes in Productivity, Quantity and Quality Related to the Short-Term Training Program and Associated Dollar Values (figures in parentheses represent the number of respondents)

	<u>Productivity</u>	<u>Quality</u>	<u>Quantity</u>
Number of companies responding to this item	(42)	(38)	(38)
Proportion of companies reporting increases	90%(38)	89%(34)	87%(33)
Average percent of increase	34%(29)	40%(23)*	37%(29)
Accumulated "dollar value per year" associated with each increase	\$18,644,500(13)	2,816,000(9)	11,784,500(12)

*A huge increase of 1,000% in one company was excluded from this average.

C. Impacts on the Employability of Selected Members of the State's Labor Force

Impacts of Special Training Situation Projects

Individuals who took part in short-term training projects, and who were subsequently employed represent resources to the companies that employ them, an addition to the State's skilled labor force and productive contributors to the economic and tax base of the State.

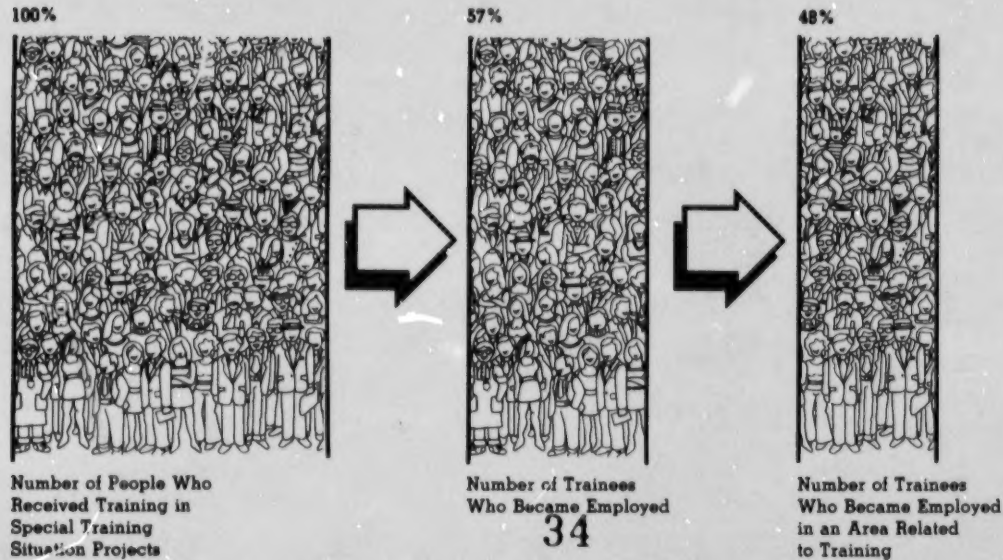
The average wages of individuals trained in these special training situations ranged from \$7,000 to \$26,000 annually.

Of the 548* people trained in special training situations, 312 or 57% subsequently became employed. Of those trainees who became employed, 254 or 48% of the total 548 became employed in areas related to the training. These findings are illustrated in Figure G.

* One special training situation involved the training of 499 high school students during their summer vacation and subsequent school year as an introduction to career skills and a motivation to remain in school. Since this training was not primarily directed toward employment, data from this project have been dropped from the analysis.

FIGURE G

**Successful Employment of Trainees
in Special Training Situation
Projects**



D. Impacts on the Economy of the State

1. Investments in Equipment, Facilities, New Technologies and Services Made Concurrent with Training

Participation in the Short-Term Training Program for a company is usually a part of a major developmental activity. This activity may be an expansion, a relocation, or the adoption of new technology. In such situations, the developmental activity is almost always accompanied by a dollar investment in equipment, facilities, new technologies, or services. These investments can be seen as contributions to the economy of the State. Training, such as that provided by the Short-Term Training Program, is typically an essential element in the success of the developmental activities and accompanying investments. Table D displays the total investments made by participating companies in each of four categories of investments. These investments were concurrent with the training program which was designed to support the company's developmental effort. Several companies reported that they had made investments but were unable to specify the amount.

TABLE D

Capital Investments That Necessitated Training (investments made concurrent with the training program)

<u>Categories</u>	<u>Investments</u>	<u>Number of Investments Reported</u>
New Technologies	\$ 6,435,000	5
Services	513,500	8
Equipment	25,854,800	17
Facilities	30,688,000	12
Other	3,107,500	3
Total	\$66,598,800	45

2. Investments in Equipment, Facilities, New Technologies and Services Made Subsequent to Training

Many of the companies which participated in the Short-Term Training Program have continued to expand and improve their operations, and so are making ongoing contributions to the revitalization of the State's economy.

Table E displays the total number of investments made subsequent to the training program in the categories of new technologies, services, construction or purchase of new facilities and equipment.

TABLE E

Capital Investments Made Subsequent to the Short-Term Training Program

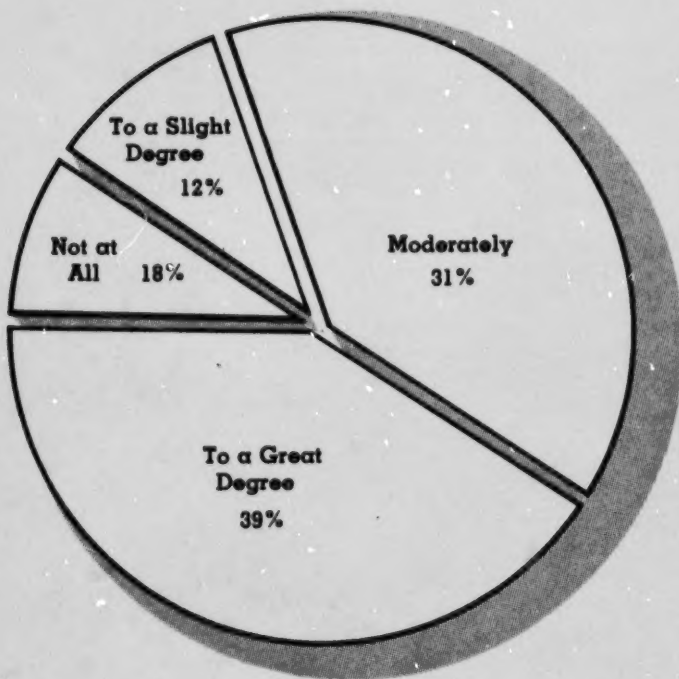
<u>Categories of Investments</u>	<u>Investments Made Subsequent to the Training Program</u>	<u>Number of Investments Reported</u>
New Technologies	\$ 5,950,000	5
Services	294,000	3
Equipment	5,857,500	13
Facilities	2,870,000	4
Other	10,000	1
Total	\$ 14,981,500	26

3. Degree of Influence of the Training Projects on Decisions to Make Investments Subsequent to the Training Program

Companies which reported capital investments or the creation of new jobs subsequent to the training project were asked to estimate the degree to which the training project influenced their investment. Figure H displays their perceptions of this influence.

FIGURE H.

**Degree of Influence
of the Training Project
on Subsequent Decisions to
Make Investments or
Create New Jobs
(number of responses - 33)**



4. Creation of New Jobs* and their Economic Impacts

Companies make an important contribution to the growth of the State's economy when they create new jobs. Thirty-six of the companies interviewed reported the creation of a total of 1,234 new jobs as a part of the developmental activity supported by the Short-Term Training Program. An additional 608 jobs were created in 11 companies subsequent to the training program. Several of those companies reported that the success of the training program influenced their decision to create new jobs. Of the total of 1,842 new jobs, 1,700 were in the manufacturing sector.

The average wages for the new jobs that were filled in each company as part of the developmental activity concurrent with the training program ranged from \$7,000 to \$70,000 annually. Figure 1 displays the average annual salaries for new jobs created in companies whose developmental effort was supported by the Short-Term Training Program.

Measures based on interindustry analysis can be used to project the economic impact of job growth in particular industries. The Regional Economic Models, Inc. (REMI) interindustry model of the New York State economy for 1972 was used as the basis for projecting the impact of the 1,700 new manufacturing jobs in companies served by the Short-Term Training Program.

Table F lists the average impacts that would be expected to occur within the first three years after the creation of 100 manufacturing jobs. Table G presents the particular impacts that are expected to result from the 1,700 new manufacturing jobs related to the Short-Term Training Program. The rationale for these projections is presented in the study, "The Economic Impact of 100 New Manufacturing Jobs in New York State," prepared by Frans Seastrand of the New York State Department of Commerce.

*Working under the assumption that both newly created jobs and the callback of workers from layoff have similar impacts on the economy, these two types of situations have been combined under the category of "New Jobs."

FIGURE I.

**Wage and Salary Distribution of
New Jobs Created in Companies
Served by the Short-Term
Training Program**

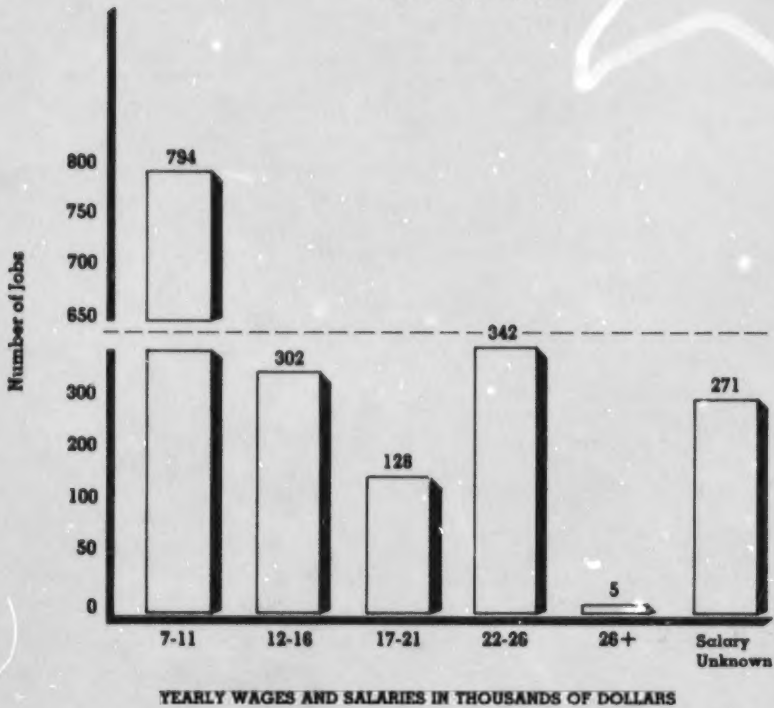


TABLE F

Average Impact of 100 New Manufacturing Jobs on the Economy of New York State (Dollar Values are in 1981 Dollars)

135 new jobs in other industries in New York State
 \$5.4 million in personal income annually
 A demographic base of 570 people, 145 families and 160 school-age children; \$240,000 in additional time deposits each year
 2 new retail establishments
 5 new service establishments
 \$2 million in additional retail sales annually
 \$850,000 in additional service receipts annually
 \$470,000 in State and local tax revenues annually

TABLE G

Impact of the 1,700 New Manufacturing Jobs Associated With Growth in Companies Served by the Short-Term Training Program (Dollar Values are in 1981 Dollars)

2,295 new jobs in other industries in New York State
 \$91.8 million in personal income annually
 A demographic base of 9,690 people, 2,465 families and 2,720 school-age children
 \$4.08 million in additional time deposits each year
 34 new retail establishments
 85 new service establishments
 \$34 million in additional retail sales annually
 \$14.45 million in additional service receipts annually
 \$8.1 million in State and local tax revenues annually

SECTION V

QUALITATIVE FINDINGS: OTHER OUTCOMES OF THE SHORT-TERM TRAINING PROGRAM

The focus of this study had been limited to a carefully defined set of outcomes and impacts related to companies, individuals and the economy. For the most part, they are measured in dollars or are quantified in some other manner.

A number of additional outcomes of short-term training projects were identified during the initial visits that preceded the telephone interviews. Because they are not in dollar values and have not been quantified, they are referred to here as "qualitative findings." These outcomes are listed below under the following categories: Other Outcomes for Companies, Other Outcomes for Individuals, Outcomes for Training Agencies, and Broader Outcomes. These outcomes were identified during site visits with companies and training agencies involved in a dozen training projects. Further study would be needed to determine the degree to which these outcomes are characteristic of the training projects as a whole.

Other Outcomes for Companies

- o Morale of workers improved in relation to increased competence.
- o Workers increased their morale and motivation because they interpreted the training program as an interest on the part of management in the worker's personal development.
- o Improved attendance, punctuality, and personal standards of performance were attributed by several companies to participation in a short-term training project.
- o Training became recognized as a powerful strategy with numerous developmental and problem-solving applications.

Other Outcomes for Individuals

- o Individuals who took part in the training projects expressed an improved sense of self-esteem stemming from their increased competence.
- o Individuals who took part in the training programs often learned basic skills and job-seeking and job-holding skills, which generally increased their employability.

- o Several programs resulted in advancements and salary increases for workers.

Outcomes for Training Agencies

- o In several cases, companies hired agency staff who had conducted the training.
- o The knowledge and experience gained from participation in the Short-Term Training Program provided training agencies with a basis for upgrading and modernizing their occupational education programs.
- o Educational agencies cooperated in order to assist a company which was important to the economic basis of their community.
- o The awareness and appreciation by business and industry of the potential resource represented by the State's educational institutions increased.
- o Some trainees who had successful training experiences enrolled in educational programs subsequent to a short-term training project in order to continue their personal development.
- o Productive relationships were initiated between educational agencies and local chambers of commerce, industrial development agencies, etc.

Broader Outcomes

Several company representatives reported that their image of State agencies had improved. In particular, they were pleased to see a sensitivity and responsiveness on the part of the State to the needs of business and industry.

APPENDIX A

Project Summaries (Arranged by Region)

Each summary contains:

1. The name(s) of the company or companies served, or the name given to the project,
2. The purpose of the training,
3. The type of training provided,
4. The name and role* of the sponsoring training agency.

Purposes and types of training are categorized using a system found in section II C1 and C2 of this report.

*In some cases the sponsoring training agencies coordinated and supervised the training project, but did not directly provide the training.

LONG ISLAND



Inflight Services, Inc. of Jamaica provides services related to the projection of motion pictures on passenger airlines. The purpose of this project was to provide basic, specific, and high technology job skills in preparation for a technological change associated with a proposed conversion from mechanical film projection to electronic videotape equipment. The plan for the training included remedial reading and math skills, electronics, and use of electronic video equipment. The training was conducted by Nassau BOCES.

F & S Repair and Supply Co. of Deer Park services, maintains, and repairs sewing machines used by the garment industry. At the time of training, the company was newly formed, and training for specific job skills was needed. This specialized training taught the skills necessary to service, maintain and repair commercial sewing machines. Suffolk III BOCES sponsored this project.

Cooperative Occupational Education for Excessed Public Service Employees. The purpose of this project was to assist laid-off public service employees in obtaining and adjusting to new jobs. This was to be accomplished through training in basic and specific job skills. The basic job skills were acquired through an employability curriculum covering skills needed to get and hold a job, such as job interviewing, resume writing career exploration, personal adjustment, and how to succeed on the job.

This training was carried out by instructors at BOCES #3 - Suffolk County. Once each trainee was hired, the BOCES provided him/her and the employer with a training plan designed to meet the specific job skills needed.

Fairchild Weston Systems, Inc. in Syosset manufactures electronic devices, camera communication equipment, and aircraft computers. The project involved an expansion of the business. Specific job-skills training was given in the areas of electrical assembly and machine shop skills. Nassau BOCES provided the training.

Hazeltine Corporation of Greenlawn produces computer terminals. The training supported an expansion of the company and included basic, specific, high tech, and managerial skills. It covered electro/mechanical assembly, basic electronics, advanced electronics, data processing, micro-technology, and essentials of management. Nassau BOCES provided the training.

Kollmorgen Corporation in Glen Cove produces photocircuits, printed circuit boards, electronic meters and drive systems. Killmorgen was expanding its business. Training was directed at basic, specific, and managerial job skills. Topics covered included quality control, blueprint reading, electro-mechanical assembly, use of computers in testing analysis, human relations and supervisory skills. Nassau BOCES provided the training.

Arkwin Industries, Inc. in Westbury manufactures hydraulic systems and component parts for the aerospace industry. The company was going through an expansion and was in need of specific job skills training. Areas covered were: proper usage of tools and machines, industrial math, blueprint reading, drills, presses, grinders, lathes, material testing, and numerical control. Training was provided by Nassau BOCES.

Algorex Corporation of Syosset specializes in the assembling and testing of electronic systems, printed circuit boards and multi-layer thick film hybrid substrates. The training project was designed to support an expansion in the Algorex Corporation's marketing areas which required an expanded skilled work force. Individuals who were to serve as customer service representatives were given specific job training in high technology skills in electronic and computer theory and circuit design. Nassau BOCES supplied the training.

Metro Door of Farmingdale manufactures open grillwork metal security doors used in stores, office buildings and private dwellings. The intent of this project was to support an expansion of the business. Both basic job skills and specific job skills were addressed. Training covered general math, blueprint reading, use of power drills and screwdrivers, installation of hardware, low and high speed saws, and use of rivet guns, routing and eyelet machines. Nassau BOCES developed this project.

Grumman Aerospace Corporation in Bethpage manufactures military and commercial aircraft as well as numerous other commercial products. The project supported an expansion with a concurrent need to upgrade certain employees with new specific job skills. Training consisted of a course in power hammer forming (bumper operations). The skill acquired enabled the trainees to form prototype air frame parts. The project was coordinated by Nassau BOCES.

One Stop Photo Shop, Inc. in North Babylon is a computerized commercial and retail photography lab/studio. It was a new business and needed specific job-skills training for new employees on its highly technical equipment. Training included computer operation, customer relations, office procedures, lab services, and studio services. BOCES III Suffolk coordinated the project.

Short-Term Training for Dislocated Workers - Cerro Wire The purpose of this project was to retrain workers laid off permanently as the result of a plant closing. Each trainee received specific job skill training in one of four occupational areas: welding, refrigeration and air conditioning, electronics, or plumbing. Nassau BOCES counseled the trainees and gave the instruction.

Chemco Systems, Inc. of Glen Cove manufactures photographic films, chemicals and specialized camera equipment used in the information-processing industry. The project supported an expansion in conjunction with a technological change. Training involved specific job skills on high technology equipment, electronic laser-operated cameras. Part I of the course covered basic electronics and included the operation of a micro-computer. Part II covered the News-Scan System which uses lasers. Nassau BOCES coordinated this project.

Majestic Dental Studio, Inc. in Uniondale does custom manufacturing of dental plates, bridges, and false teeth. The purpose of the project was to train new employees hired as part of an expansion of the business. The

trainees received specific job-skill instruction as dental lab technicians. Training areas included casting, waxing, and finishing dentures and precision attachments. Nassau BOCES coordinated the training.

Optica Manufacturing Corporation of North Bay Shore manufactures cylindrical lenses used in the production of M17 gas masks and the M25A tank mask. The project supported an expansion of the company by providing specific job-skills training for new employees. Training was appropriate for the skills necessary for the following job titles: sheet caster, sheet cutter, panel chamferer, former, relaxer, 3D machine operator, air duster, lens gauger, salvager, lens chamferer, axis marker, and quality control inspector. The project was coordinated by BOCES #2-Suffolk.

NEW YORK CITY

Training of Cooks/Chefs and Table Service Personnel in the Hotel/Motel Industry. The purpose of these two projects was to help the hotel/motel industry of New York City expand by upgrading existing personnel whose old positions would then be filled by new hirees. Specific job-skills training was conducted for the positions of vegetable cook, chef, fry cook, saucier, garde-manger, waiter, maitre'd, and captain. Training was sponsored by New York City Public Schools.

American International Group in New York City is a financial-insurance investment-holding corporation needing to upgrade its support staff. Both basic and specific job skills were of concern. Training topics included basic reading and math skills, business writing and grammar, language and communications, and office practice and machines. The Borough of Manhattan Community College conducted the instruction.

Animators and Film Editors in New York City. This project involved a technological change in the equipment used by union members of Motion Picture Editors - Local 771 Screen Cartoonists - Local 841 of the International Alliance of Theatrical Stage Employees. Focus was on the highly technical specific job-skills associated with videotape editing as it differs from film editing. The project was sponsored by the Board of Education of the City of New York.

Office/Clerical Collaborative Project. The purpose of this project was to provide high school students with basic and specific job skills in the clerical areas and to motivate them to continue in the program. The New York City Board of Education served as the sponsor for this program and training was provided at three City University of New York sites.

Eaves-Brooks Costume Company of Long Island City is a costume manufacturing company which sells and rents costumes for Broadway shows and television productions. The company was expanding its work force. The focus of the training included not only specific job skills but also general company orientation and managerial skills due to the more formalized policies and procedures necessitated by the expansion. The training covered the history of the company, company benefits, company policies, and specific job skills for supervisors, costumers, drapers, patternmakers, cutters, and other job titles. The project was coordinated by Bronx Community College.



Sawmill Industries in Yonkers produces sleeping bags and a line of exercise equipment. A company new to New York, it has moved here from out of state. New employees required training in the specific job skills needed in the production of sleeping bags and the operation of related machinery. Instruction was coordinated by the Yonkers Public Schools.

Machine Shop Skills Upgrading Program. The purpose of this project was to upgrade the skills of employees working for members of the Rockland County Machine Shop Consortium. This specific job skills training included learning how to operate lathes, milling machines, drills, and surface grinders. Training was conducted by the Rockland County BOCES and representatives from the companies involved.

Orchard Technician Program. The purpose was to help the fruit growing industry expand by providing specific job-skill and managerial training. The instruction included cultivating practices, operation of orchard equipment, equipment maintenance, basic record keeping and management. Instructors were provided by Ulster County Community College, the sponsoring agency, and the New York State Agricultural Extension Station.

Excelsior Transparent Bag Manufacturing Corporation in Yonkers manufactures transparent bags for the packaging industry, complete with appropri

ate labeling and graphics. This project supported an expansion of the business in conjunction with a technological change, new printing process and related equipment. The necessary specific job skills training included press operations, plate molds, manufacturing and ink formulation techniques. The training was sponsored by the Yonkers Public Schools.

Screw Machine Operators Training Program. The purpose of this project was to upgrade the specific job skills of employees in machine trades companies. Instruction covered processes involved in setting up and operating the Brown and Sharpe screw machine and the Davenport screw machine. The project was coordinated and evaluated by Dutchess County BOCES.

Machine Shop Skills - Basic and Intermediate Program. The purpose of this project was to alleviate a shortage of trained machinists needed by local industry. The training leading to these specific job skills included applied mathematics, and mechanical sketching/blueprints, as well as machine shop equipment and safety. Instruction was given by faculty at Westchester Community College.

Day Care Council of Westchester in White Plains is made up of day care centers located in Westchester County. The purpose of training was to upgrade the quality of the service in the centers and insure that the Family Day Care Home operators meet certification requirements. The project required specific job-skill training and among the topics covered were regulations for admitting children, nutrition, health and medical procedures, safety and fire regulations, certification requirements for the home, day care and record keeping. The Yonkers Public Schools coordinated and supervised the project.

Restaurant and Catering Service Program. The goal of this project was to reduce a shortage of trained food-service personnel. Training focused on specific job-skills needed in six different food service positions. The positions were assistant cook, assistant baker, short order cook, caterer's helper, waiter, and waitress. Yonkers Public Schools coordinated the program and hired the instructor.

L.P. Gas Industry Consortium Training Program - Dutchess County. The intent of this project was to support a business expansion, by training entry-level employees for employment by the consortium, as well as to upgrade current employees. Both basic job skills and specific job skills

were involved. Among the topics covered were petroleum gas, regulations, orifices, pilot gas burners, bimetals, main gas burners, diastats, heat exchangers, thermocouples, electromagnetic power unit, and forced air heating controls systems. Training was done at a Dutchess County BOCES site.

Nickylou Fashions in Poughkeepsie is a company that specializes in the manufacture of men's and women's jackets and coats. The project was designed to accommodate an expansion of the company. Prospective employees were given training in entry level specific job skills for machine operators. Dutchess County BOCES played a role in identifying training needs and designing the program which was conducted at the company site.



Sewing Machine Operator Training The purpose was to help local needle trades industries expand. These companies did not feel that they could finance the necessary specific job skill training. Instruction covered the safe and proper operation of industrial sewing machines. Employees of Rensselaer-Columbia-Greene Counties BOCES presented the instruction.

Dynabil Industries, Inc. in West Coxsackie is a machine fabrication shop which specializes in custom, complete assembly, sheet metal fabrication. The project supported an expansion of the company. It involved specific job skill training which included the following courses: elementary technical math, machine process theory, and manufacturing processes. The instructors were employees of Rensselaer-Columbia-Greene BOCES.

Cooperative Employee Training Program for Small Business in the Colonie Area. This project served the special training needs of a number of small businesses. Training covered basic job skills, specific job skills, and managerial skills. Nine businesses participated, each with its own needs. Some of the types of training covered were customer relations, team building, stress management, rest room and general office cleaning procedures, developing interpersonal relationships, RHB machine training, and time management. The Albany-Schoharie-Schenectady BOCES coordinated the project in partnership with the Colonie Chamber of Commerce.

McAuto Systems Group Inc. of Menands, a wholly owned subsidiary of the McDonnell Douglas Automation Company, operates the State Department of Social Services' Mechanical Management Information Service. The training project was designed to support McAuto's relocation from New York City to the Capital District Area. Basic skills and entry level job skills were provided to prepare individuals for positions as data entry operators.

Hoover Universal, Beverage Bottle Division in Colonie manufactures plastic bottles. The project supported the expansion of the company through specific job skills training. The content of the training included the processes involved in injection molding and blow molding as well as troubleshooting and materials handling. Schenectady County Community College coordinated the project and a member of its faculty presented the instruction.



Machine Shop Program. The purpose of this project was to alleviate a shortage of trained machinists. This involved specific job skills. The training was designed to teach the practical and theoretical skills for producing and performing on parts of the following machines: saw, lathe, milling machine, drill press, shaper, grinder, basic bench operations and heat treatment (furnace) of metals. The Clinton-Essex-Warren-Washington BOCES is conducting the training.

Mitel, Inc. of Ogdensburg manufactures telephone components. It was expanding and needed to provide entry-level personnel with basic job skills and to upgrade current employees with necessary high technology skills. The basic skills training covered electrical assembly, while the high tech training was in the area of general electronics and microprocessing. Instruction was coordinated by the St. Lawrence-Lewis BOCES.

Phillips Cables, Inc., which manufactures various cable configurations, is a Canadian company that has opened a new plant in Watertown, New York. The new plant required managerial as well as basic and specific job-skill training. The managerial training phase was completed and was taught by an instructor from Jefferson County Community College.

Mineral Processing Corp. of New York in Massena does dross recovery. The purpose of the project was to train new employees for this new company whose parent company is from out of state. Specific job skills were required. Some of the training areas were safety, material-handling equipment, production equipment, properties of aluminum, furnace operation, and refractory installation. The project was supervised by the St. Lawrence-Lewis BOCES.

New York Air Brake Co. This project supported a technological change that this Watertown company was making in the form of high technology manufacturing equipment. It was necessary to give specific job skills and high technology training to first-line supervisors who had very limited exposure to N. C. machine technology. The training acquainted them with the terminology, concepts, limitations, and capabilities of this technology. The project was under the direct supervision of Jefferson-Lewis BOCES.

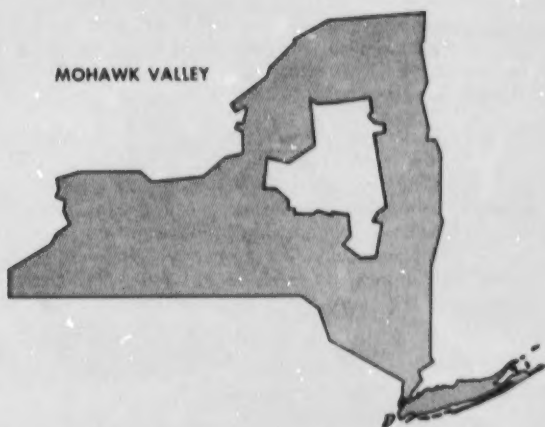
Perrella Gloves, Inc. of Gloversville manufactures high quality sports gloves. The intent of the project was to support a planned expansion of the business to a new location in Elizabethtown. It involved specific job-skill training in the various steps and procedures in the pattern cutting and sewing of leather for making gloves. Instruction was conducted by two experienced individuals identified by the company and hired as adjunct faculty by North Country Community College, sponsors of the project.

American Computer Assembly, Inc. in Ogdensburg is a supplier and assembler of electronic components. The purpose of this project was to upgrade the skills of employees who had recently been promoted to positions of supervisory responsibility by giving them managerial skills training. The training covered leadership skills, management skills, personnel skills, current problems faced in supervision, and a framework for supervisory effectiveness. SUNY Canton ATC developed and presented the training using its own faculty.

Colofiche Corporation located in Essex, is a company, originally from Canada, which intends to set up a new operation in New York State. It has a new process that provides color microfiche of exceptional resolution and clarity as well as viewer/projector equipment. The training focus was on specific job skills and high technology knowledge. Training courses dealt specifically with the production of color microfiche masters, assembly of

the color microfiche viewer/projector, and basic concepts in group dynamics and problem-solving strategies to be applied at the worksite. Training was supervised by North Country Community College and carried out by its adjunct faculty.

Pilot Project for Short-Term Training Program for Employment in the Tourism Industry. The goal of this project was to reduce the unemployment rate by preparing unemployed young adults to handle the basic and specific job skills needed in the tourism industry. Among the topics covered were salesmanship, familiarization/orientation to cash registers, handling money, Canadian currency, security, robberies/burglaries, hospitality techniques, and visits to key tourist sites. The training was supervised and coordinated by Jefferson Community College.



Revere Copper Products, Inc., Rome Division, produces primary copper, brass, and copper alloy metals in high tolerance rod, bar, sheet, and tube stock. The company desired to upgrade its employees to make the company more productive. Rome Cable Corporation, manufacturer of wire and cable had similar needs. The needs focused on basic, specific, and managerial skills. Four areas were covered: industrial trainer skills, pre-apprentice, mill production skills, and first-line supervisor skills. This project was coordinated by Herkimer County BOCES.

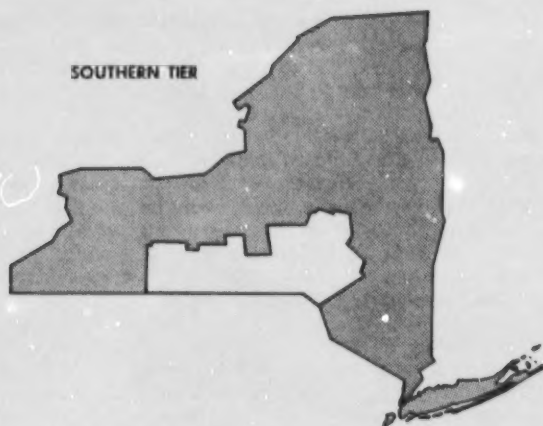
Interknitting, Ltd. in Cobleskill manufactures very high quality linens and open-knit textiles. This project supported a company expansion by providing basic job-skills training and specific job-skills training. Instruction covered the knowledge and skills necessary for employers to function as material inspectors, repairers, and threaders. Albany-Schenectady-Schoharie BOCES sponsored the project and helped to design and supervise the training.

F.G.I. Fibers, Inc. in Amsterdam produces fiberglass fibers for their weaving facility. Since this was a new company, there was no readily available skilled labor. Specific job skills of a highly technological type were required. Services provided by the training agency included a

definition of job performance and training in details of the entire plant operation, eight levels of furnace and fiber forming, technical language of the glass industry, and the fiber forming process. The Greater Amsterdam School District coordinated and supervised the program.

Homogeneous Metals in Clayville produces exotic metals. At the time of the project, the company had just moved to Clayville from another Oneida County town. Associated with the move was an expansion of the business which led to the need for managerial training for first-line supervisors. The main topics covered were management, labor relations, basic communications skills, human factors engineering, waste, and crisis management. The course was taught by an adjunct faculty member of Mohawk Valley Community College.

Maintenance Electrician Update. The purpose of this project was to alleviate a shortage of trained industrial electricians at five different companies, by updating maintenance electricians. This involved specific job-skill training which included reading and interpreting electrical prints, troubleshooting electrical circuits as well as trouble-shooting, diagnosing, and repairing AC/DC motors, transformers, diodes, SCR's, triacs, and rectifiers. Mohawk Valley Community College provided the instructors from its adjunct faculty.



Building Trades - Classroom Training - CETA & Energy-Related Occupations. The purpose of this project was to provide unemployed youth in the 16-25 age group with employability skills in the building trades. The training included specific job skills such as carpentry, masonry, and electricity. The Delaware-Chenango BOCES provided equipment support for this project.

Culligan Water Conditioning and Sunmaster, Inc. in Corning both expressed a need to upgrade the skills of their first-line supervisory personnel. Training was provided by an instructor from the Corning Community College faculty. Some of the topics included were communications and the supervisor, leadership and decision making, supervisory responsibility, handling employee complaints, and employee development.

Short-Term Training for Business and Industry A number of companies in Chenango and Madison counties needed to upgrade the skills of their employees in a variety of specific job skill areas. Training programs were run in statistical quality control, plastics technology, metals, and basic electricity. Morrisville Agricultural and Technical College provided the instruction.

Trinity Valley Iron and Steel in Elmira Heights is a foundry which had moved into the State and needed to train its employees in specific job

skills. Instruction included topics in metal casting, blueprint reading and sketching. Training was done by Corning Community College.

Delaware and Hudson Railway Co. needed to upgrade its work force at its Oneonta repair facility. The project provided specific job skills necessary for box car repair. The curriculum included welding and metal fabrication. Greene #2 BOCES administered the project.

Shepard Niles Crane and Hoist Corp., a subsidiary of Vulcan, Inc., is a manufacturer of industrial cranes and hoists, and is located in Montour Falls. The corporation was involved in a technological change associated with production standards. This required corresponding changes in specific job skills. Among the topics covered were testing and measurement, tolerance/finishes, numerical control, and quality control. Instructors came from the sponsoring agency, Corning Community College, and Schuyler-Chemung-Tioga BOCES.

Data Entry Operator Training. The project was run for a large group of workers laid off due to a plant closing. It would provide these workers with employable specific job skills in computer data entry, a high technology area. Some of the training topics include recording data; record and file concepts using magnetic tape, disk, diskette records and the operation of data entry machines; program control, and keyboard proficiency. Training was conducted by an instructor at Schuyler-Chemung-Tioga BOCES.

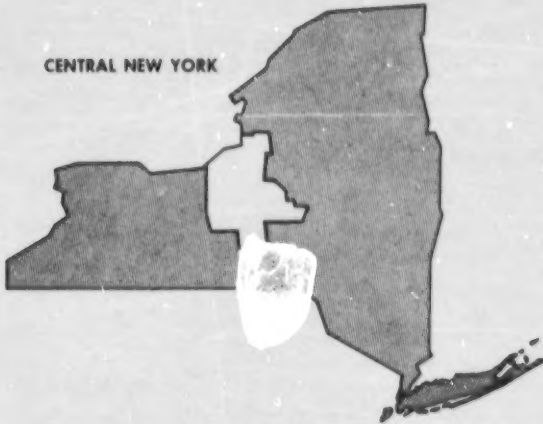
Thatcher Glass Corporation of Elmira manufactures glass bottles. A technological change was made in one of the phases of its manufacturing process that required appropriate specific job skill training. Specifically, welders who had been working with cast iron had to learn how to weld the new bronze molds to be used in making glass bottles. The function of the welders was to repair the mold. Training was coordinated by the Schuyler-Chemung-Tioga BOCES. The instructor was a retired BOCES faculty member.

Food/Hospitality Administration Training. The project was designed to retrain laid-off supervisors to work as supervisors in the food and hospitality field, an area new to them. This necessitated both basic job skills and managerial training in the new field. For example, food preparation, mixology, and sanitation were covered in addition to personnel and staffing, supplies procurement, and management and leadership. The project was coordinated by Corning Community College.

Orthstar, Inc. in Elmira specializes in consultation, design, and development of computer system, high technology software. The company sought to upgrade the specific job skills of some of its employees in this high technology field. Training consisted of seminars in computer networking, design of effective data bases, and marketing. Corning Community College developed the training proposal and identified appropriate seminars.

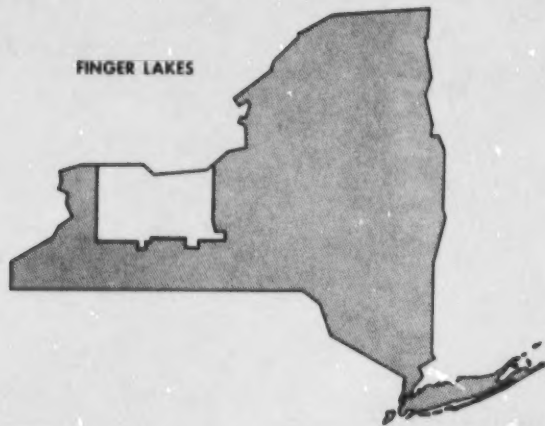
Sherburne Metal Products, Inc. of Sherburne manufactures 5/16" continuous cast copper rods which are the basic raw material for the manufacture of electrical cable. At the time of the training, this was a new business which had to train its employees before it could start production. Specific job skill training was needed for the high technology machinery used by the company. It covered the set-up, operation, and maintenance of the Outokumpu Oy upcast equipment and the Buehler rolling mill. The project was coordinated and administered by Delaware-Chenango BOCES.

CENTRAL NEW YORK



Crescent Corset Company, Inc. in Cortland manufactures and distributes foundation garments. The project supported an expansion of the company by providing training in the basic and specific job skills needed by new employees. The training included the theory and practice of foundation garment sewing methods on single and multiple needle industrial grade sewing machines. Training was coordinated by the Cortland-Madison BOCES.

Microcomputer Training for Small Businesses. This project was designed to help small business by providing training in the high technology field of microcomputers. A series of awareness levels to intensive training workshops, focusing on microcomputer applications for small business operations, were conducted. The project was coordinated by Oswego County BOCES.



Singer Company (now called Telex) of Rochester manufactures and machines metal parts. The purpose of this project was to upgrade the skills of selected employees, through cross-training, in order to fulfill a need for machinists. This was accomplished by providing basic and specific job skills through training in blueprint reading, shop math, machine demonstration, and project work. An instructor from the Monroe #1 BOCES conducted the training.

Electronic Assembly Training Program. A number of companies in the Rochester Area with unfilled job openings involving electronic assembly, and with more openings anticipated for the future, asked the Rochester City School District to implement a training program to provide them with workers with the specific job skills needed in electronic assembly. Training was conducted at a Rochester City School District facility and included topics such as safety habits, parts identification, assembly drawings, wire harness, and soldering. Eastman Kodak, Rochester Instrument Systems, and five additional companies hired completers of the program.

Word Processing Training Program. The intention of the project was to help various companies make the technological change of incorporating word processing centers into their day-to-day operations. This necessitated the specific job-skill training associated with high technology word

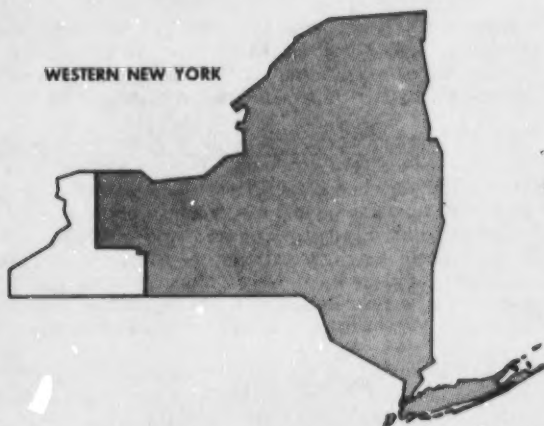
processors. The course included the following topics: hardware, basics, cursor motion, scrolling, basic text entry, deleting, saving and abandoning files, file naming, other menus and printing documents. The Rochester City School District coordinated this project and hired the instructors.

The Food Products Division (Birdseye) or General Foods Corporation in Avon packages food products. This corporation has expanded its manufacturing and warehouse facilities. This involved the addition of sophisticated high-speed packaging and electronic process control equipment. There was a concurrent need to upgrade the specific job skills and high tech knowledge of new and existing maintenance staff members. A variety of courses and seminars were conducted to train employees to use and maintain the new equipment. Most of the instruction was conducted by instructors from the Rochester Institute of Technology.

LP-Gas Introductory Course. This project's primary aim was to upgrade the specific job skills of personnel working in the LP-Gas industry. The curriculum was designed to teach the trainees to use the tools necessary for LP-Gas installation, use proper safety practices, practice positive techniques of customer relations, inspect and maintain LP-Gas equipment, and become aware of the State regulations directly related to LP-Gas. The Rochester City School District coordinated the project and hired the instructor.

Rochester Products Division of General Motors is located in Rochester and manufactures carburetors and fuel supply systems among other products. The company has developed two new products. This project supports a technological change associated with these new products. Specific job skill training was needed. Blueprint reading, keyed to the highly technical new products, was taught. Monroe Community College supervised this project and provided the instructor.

WESTERN NEW YORK



Acme Electric Corporation in Allegany manufactures transformers and magnetic components. It sought training in order to upgrade the skills of some of its employees. Training included safety, schematics, component identification and use, circuit configuration, trouble shooting and other specific job skills in the fields of electricity and electronics. Cattaraugus/Allegany BOCES coordinated the training.

Bush Industries in Little Valley produces TV and hi-fi stands. Bush participated in three projects all of which supported an expansion of its business. Training occurred in three categories: basic job skills, specific job skills, and managerial skills. Training covered the operation of a variety of woodworking tools, manufacturing processes such as laminating, blueprint reading, safety quality control, finishing, and management and supervisory skills. Cattaraugus/Allegany BOCES coordinated and administered the projects. Training was presented by BOCES staff and faculty from Jamestown Community College.

Dresser Clark Division of Dresser Industries, Inc. in Olean manufactures compressors, gas turbines, and power recovery expanders. The company wanted to upgrade the specific job skills of laid off employees in anticipation of rehiring them. Training covered use of grinding machines and milling machines; lathe work, trade mathematics, blueprint reading and machine theory. The instruction was conducted by Cattaraugus County BOCES.

Adult Occupational Education - Retraining for United Auto Workers. The purpose of this project was to provide laid off UAW members with new employable skills. It did this by placing these personnel in one of three occupational programs: AC/refrigeration, machine shop, and instrumentation. Instruction was conducted by faculty at Orleans-Niagra BOCES.

Chevrolet Motor Division of General Motors Corporation in Tonawanda manufactures automobile engines. The company received a contract which necessitated a technological change in the assembly line. There was a consequent need to provide specific job skills, basic job skills, and some high technology training since part of the new process included computer technology. The training content included new technology (general computer knowledge), metric measurement, new gauge procedure, proper use of gauging, blueprint reading, and geometric tolerancing. The training project was coordinated by the Erie #1 BOCES.

Buffalo Color Corporation in Buffalo is presently manufacturing indigo dye. The purpose of this project was to upgrade current employees in the maintenance department through cross-training in specific job skills. Mechanical craftsmen were trained in the areas of welding and sheet metal skills. Building construction personnel received training in blueprint reading, carpentry, brick masonry, concrete finishing and painting. Erie #1 BOCES developed and coordinated the training.

Dunkirk Ice Cream, Inc. in Dunkirk produces a variety of ice cream products. The company was expanding its product lines concurrently with a technological change, brought about by the addition of five new machines. This necessitated corresponding specific job skills training. It covered areas such as plumbing, freezing, fruit/nut feeders, safety-housekeeping, mechanics, shut-down, start-up, and change over. Training was coordinated and monitored by Dunkirk Public Schools.

Al Tech Specialty Steel Corporaton in Dunkirk produces stainless steel, tool steel, and special alloys which are used in the defense industry. The purpose of this project was to upgrade the specific job skills of the sales and marketing staff. Some of the topics covered were field sales management, principles of marketing, goal setting and planning, prospecting, pre-call planning, listening/communications skills, telephone technique, and sales forecasting. Dunkirk Public Schools worked with Al Tech to define the training needs and identify an appropriate course of study.

Ferree Plastics, Inc. of Lockport produces plastic parts through injection molding. The goal of this project was to upgrade the specific job skills of certain employees so that they would be able to fill positions in machine maintenance and repair. Training included technical math, hydraulics, industrial electricity, solid state devices, microprocessors, schematic reading, and Reed-Prentice Injection Molding Machine repair and maintenance. Instruction was presented by faculty of Niagara County Community College.

Falconer Glass Industries, Inc. located in Falconer produces a variety of glass products such as mirrors, and panels for squash courts. The purpose of this project was to upgrade employee skills to reduce waste in the production process. Training focused on specific job skills. The course taught was in applied statistics with an emphasis on statistical quality control procedures appropriate to the production process at Falconer Glass. Jamestown Community College sponsored the project and provided one of its part-time instructors to do the training.

APPENDIX B

The Design of the Impact Study

Overview

This study is a post-hoc description of outcomes of short-term training projects funded by the Office of Occupational and Continuing Education of the New York State Education Department. It is based on opinion and facts regarding the short-term training projects' contribution to:

- (1) the economic well being of specific companies producing goods or services in New York State,
- (2) the employability of selected members of the New York State labor force, and
- (3) the development of the economy of New York State.

In this section the method used to collect this information will be detailed.

How the Study Was Designed

In order to develop a design of study and instruments for collecting data, a number of preliminary activities were conducted.

1. The purpose of the program and its intended outcomes were outlined.
2. The project files maintained at the State Education Department were examined to categorize and describe the types of projects funded.
3. A number of company sites and associated training agencies were visited and interviews were conducted to expand and refine the set of intended outcomes as well as to derive information on the factors that influenced success and failure of individual projects to achieve their intended outcomes.
4. The purpose of the study was defined as an assessment of the impact of the Short-Term Training Program on the three areas listed in the overview above. A study of additional outcomes and means of improving the program was deferred to a second stage of study.

5. A sample of projects was chosen for study.
6. Procedures for data collection were developed. It was decided to rely primarily on information from telephone interviews in order to obtain a wide base of data in a short period of time at low expense.

Population and Sample

From November, 1980 to January, 1984 the New York State Education Department funded 140 short-term training projects. This study was limited to 78 projects which were funded before July, 1983. That date was chosen to ensure that sufficient time had elapsed for the project to be completed and for intended impacts to be felt.

Development of Data Collection Procedures

The projects were divided into two broad types:

1. Projects designed to support companies engaged in the manufacturing of a product or the provision of a service -"Production and Service Organizations," and
2. Projects designed to prepare workers for participation in the labor force -"Special Training Situations."

Detailed descriptions of these two types of projects and models associated with each are provided in Section III of this report.

The presence of two very different types of projects and associated models of impact necessitated the development of two different ways to assess impact. The interview topics that resulted from making each of these models operational are described in separate sections below.

Impact concepts and interview questions were reviewed by staff of the New York State Education Department's Bureau of Economic Development Coordination and Occupational Education Research and Evaluation, and staff of the New York State Department of Commerce's Bureau of Business Research. Respondents made suggestions regarding primary variables and methods for data collection. These comments served as a framework for revisions.

The revised procedures were subjected to a pilot test with organizations being visited in a preparatory phase of the study. Difficulties in capturing some data were encountered and the procedures underwent further revisions. The final version of interview topics may be found in Appendices C and D.

Interviews for Production and Service Organizations

The model for production organizations, more fully described in Section III of this report, assumes some problem in a company's capacity to increase income and reduce expense. This problem results in the selection of a strategy to deal with the problem (e.g., training, new equipment, new technology, organizational redesign). The intended outcomes of these strategies are usually increased quality and quantity of product or services and/or increased productivity. These outcomes are assumed to bring direct and measurable financial benefits to the companies that eventually affect the profit or the amount of money management has to work with once expenses have been paid from income. The allocation of this money results in impacts on the local, State and the national economies, including increased employment, business growth, tax revenues, etc.

In order to generate an interview relevant to these concepts, the following definitions were stipulated.

Productivity: The relationship of input to output. Examples of productivity indicators are: reduced unit cost of product/sales, increased units of production per person, increased units of production per production line, and decreased percent of unanticipated downtime.

Quality: An index of the number of products or services that meet some set of standards. Examples of quality indexes are: percent yield, number of rejects at delivery, and scrap weight reductions.

Quantity: Number of units produced in a specific time period. Examples of quantity measures are number of units per hour or per day.

Profit: The difference between income and expense in a given period of time.

Investments: Amount of money used to purchase new technologies, services, equipment, construct or purchase new facilities, or pay dividends. Companies were queried concerning investments made concurrent with training and those made subsequent to training. For

subsequent investments, they were asked the degree to which the decision to make the investment could be attributed to the training program.

New jobs: Number of new employment opportunities created as part of the training program and subsequent to the training program. This includes jobs that involved the call-back of workers from layoff.

In addition to the information collected on these variables, demographic information was collected on those employees who were upgraded and newly hired. Included was information on race, ethnicity and handicap--than half of the projects studied. (See Appendix C for Interview Topics.)

Interviews for Special Training Situations

The model for special training situations fully described in Section III of this report assumes that training will produce skilled workers who will be eligible for employment in the marketplace. Once employed, these individuals have an impact on the economy. Definitions of critical variables used to develop a questionnaire for this model are:

Skilled Work Force: Number and characteristics of individuals trained. This represents the outcomes of training.

Employments: Number of trainees employed in the areas related to training. This represents the impact of training.

(See Appendix D for interview topics.)

Data Collection

Interviewers were assigned to analyze the project file for each training program and to conduct a telephone interview with key individuals at the participating organizations. The interviewers were chosen for their academic or practical experience with business and industry and prior experience with data collection through interviews. All interviewers were oriented to the study and the data collection procedures in what was equivalent to a full-day training session.

Three phases of data collection were required: preparation, interview, and write up. In the preparation stage, interviewers examined files on each project located at the New York State Education Department. The purpose of this review was to orient the interviewer to the company, identify the objectives of training (e.g., impacts on productivity, quality, or quantity) and to prepare a capsule description of each project. Interviewers reviewed their findings with the coordinators of the study and discussed strategies for interviewing respondents at the organization. The contact person at the organization and/or training agency was then notified by mail of the upcoming interview and given a set of questions that would be addressed during a subsequent telephone interview (see Appendices C & D). A week later the interviewer called the organization(s) and made an appointment for a telephone interview with a respondent able to address these questions (e.g., comptroller, personnel manager, plant manager, accountant).

The interview began with an introduction to the study, which included a review of its purpose, a reading of the project summary to the respondent to assure its accuracy and a guarantee of confidentiality concerning the economic impact information. This introduction was followed by questions soliciting the data required to complete the interview form. Interviewers sought actual data first, an estimate second, and yes or no responses as a last resort.

In the write-up phase, interviewers presented their capsule summaries and reports of findings and discussed them with the study coordinators.

APPENDIX C

Interview Topics for Production and Service Organizations

The following questions and information requests were sent to representatives of companies to be surveyed. These topics served as a foundation for the telephone interviews during which impact data were collected.

Short-Term Training for Economic Development-Interview Topics (companies)

Productivity

1. Have there been changes in productivity related to the training program? If no, explain.
2. How do you derive your productivity index?
3. What are the changes in your productivity index that have occurred during the period of time surrounding the training program?

Quality

1. Have there been changes in the quality of your product related to the training program? If no, explain.
2. How do you derive your index of quality?
3. What are the changes in your index of quality that have occurred during the period of time surrounding the training program?

Quantity

1. Have there been changes in the quantity of your product related to the training program? If no, explain.
2. What is your measure of quantity?
3. What are the changes in the quantity of your product that have occurred during the period of time surrounding the training program?

Impact on Revenues

1. Did you increase your net cash flow during the period concurrent with or subsequent to the training?
2. Did you increase your gross revenues during the period concurrent with or subsequent to the training?

Economic Development

Capital is invested in a variety of ways to improve the general economy. A few of these are listed below. Please indicate or estimate what your company has invested in any of these categories concurrent with or subsequent to the training program.

<u>Types of Investments</u>	<u>Concurrent with Training</u>	<u>Subsequent to Training</u>
New jobs		
-number of new employees	_____	_____
-range of pay for new employees	_____	_____
-average wage	_____	_____
-average length of stay	_____	_____
 New technologies	\$ _____	\$ _____
Services	\$ _____	\$ _____
Equipment	\$ _____	\$ _____
Construction or purchase of new facilities	\$ _____	\$ _____
Dividends	\$ _____	\$ _____
Other	\$ _____	\$ _____

Information about Trainees

Number	Upgrades	New Hires
1. Black	_____	_____
2. White	_____	_____
3. Hispanic	_____	_____
4. Indian	_____	_____
5. Asian	_____	_____
6. Handicapped	_____	_____

APPENDIX D

Interview Topics for Special Training Situations

The following questions and information requests were sent to representatives of industry and training agencies to be surveyed. The topics served as a foundation for the telephone interviews during which impact data were collected.

Short-Term Training for Economic Development-Interview Topics (Training situations)

How many people were trained? _____

How many of the trainees became employed? _____

How many were employed in areas related to the training? _____

Average wage _____ Range of wages _____

Average length of stay on the job _____

Number

1. Black _____

2. White _____

3. Hispanic _____

4. Indian _____

5. Asian _____

6. Handicapped _____